
Bauhinia hekouensis (Leguminosae, Caesalpinioideae), a New Species from Yunnan, China

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ABSTRACT. *Bauhinia hekouensis* T. Y. Tu & D. X. Zhang (Leguminosae, Caesalpinioideae), a narrow endemic from Hekou County, Yunnan Province, in southwestern China, is described and illustrated. The new species can be diagnosed by a combination of characters, including tendrilled lianas; bilobed leaves with nine to 11 nerves; terminal, racemose inflorescences; spindle-shaped, slightly falcate flower buds with acute apices; tubular hypanthium; five freely reflexed sepals during anthesis; and large white flowers with oblanceolate, crisped petal blades. The general morphology suggests an affinity of the new species to series *Clavatae* (de Wit) Wunderlin of section *Phanera* (Lour.) Wunderlin in *Bauhinia* L., especially to the species *B. coccinea* (Lour.) DC. and *B. nervosa* (Wall. ex Benth.) Baker.

Key words: *Bauhinia*, Caesalpinioideae, China, IUCN Red List, Leguminosae.

The legume genus *Bauhinia* L. comprises ca. 300 species of trees, shrubs, and lianas. As the largest genus of the tribe Cercideae (Leguminosae, Caesalpinioideae), it occurs throughout pantropic areas, with its two centers of diversity being southeastern Asia and South America, extending into southern North America (Wunderlin et al., 1987). Forty-two species of *Bauhinia* from China were documented in the *Flora Reipublicae Popularis Sinica* (Chen, 1988), and several additional species have been subsequently described or recorded (Zhang, 1993; Zhang & Chen, 1996, 1998). There are 47 species recognized in the recently published *Flora of China* (Chen et al., 2010). During an exploration for *Bauhinia* in southwestern China as part of our long-term endeavor on the systematics and evolution of the genus, an apparently new species was discovered. The new species exhibits characteristics of the series *Clavatae* (de Wit) Wunderlin in *Bauhinia*, from section *Phanera* (Lour.) Wunderlin, subgenus *Phanera* (Lour.) Wunderlin, K. Larsen & S. S. Larsen. It shows close affinities to *B. coccinea* (Lour.) DC. and *B. nervosa* (Wall. & Benth.) Baker. *Bauhinia* ser.

Clavatae consists of ca. 22 species occurring in tropical southeastern Asia (de Wit, 1956; Larsen et al., 1980; Wunderlin et al., 1987), with one species and one subspecies previously recorded from Yunnan Province of China (Chen et al., 2010).

Bauhinia hekouensis T. Y. Tu & D. X. Zhang, sp. nov. TYPE: China. Yunnan: Hekou Co., Nanxi Town, Baishahe, 22°41.237'N, 103°57.597'E, 169 m, near stream, 11 Oct. 2008, T. Tu 511 (holotype, IBSC; isotypes, IBSC, KUN). Figure 1.

Haec species a *Bauhinia coccinea* (Lour.) DC. et *B. nervosa* (Wall. ex Benth.) Baker petiolo 2.5–6 (nec 1.5–3) cm longo, alabastro fusiformi (nec ovato nec elliptico) leviter falcato apice acuto atque petalis albis lamina oblanceolata crispata differt.

Large liana, extending into upper canopies of host trees (4–10 m); tendrils on young branches densely pubescent, singly inserted at nodes; branchlets terete, pubescent when young, gradually glabrescent. Leaves ovate to suborbicular, up to 12 × 14 cm; the blades bifid to 1/3 divided with a broad sinus, coriaceous to chartaceous, blade surface brownish pubescent when young to glabrate, blade base cordate, with primary nerves 9 to 11, stout, connected by transverse secondary nerves; petioles green, 2.5–6 cm; stipules deciduous, obovate, rotund or orbicular, ca. 3–6 × 2–4 mm, glabrous or minutely puberulent. Inflorescences racemose, terminal, unbranched, 5–25 cm; axis greenish pubescent, with up to ca. 30 flowers; pedicels slender, 2.1–3.4 cm, puberulent; bracts lanceolate, green, 10–15 × 2–3 mm; bracteoles linear, acute, 4–8 mm, inserted above the middle of the pedicels. Flower buds green, spindle-shaped, slightly falcate, apex acute, 15–25 × 3–5 mm; hypanthium tubular, 17–21 × 1.5–2.5 mm; calyx green, splitting into 5 sepals on the apex of the hypanthium, acicular, subulate, reflexed at anthesis, 1.8–2.5 cm; petals arranged along the dorsal side of the flower, subequal, blades white, crisped, the lower surface and edges of the upper surface sparsely pubescent, the median zone of

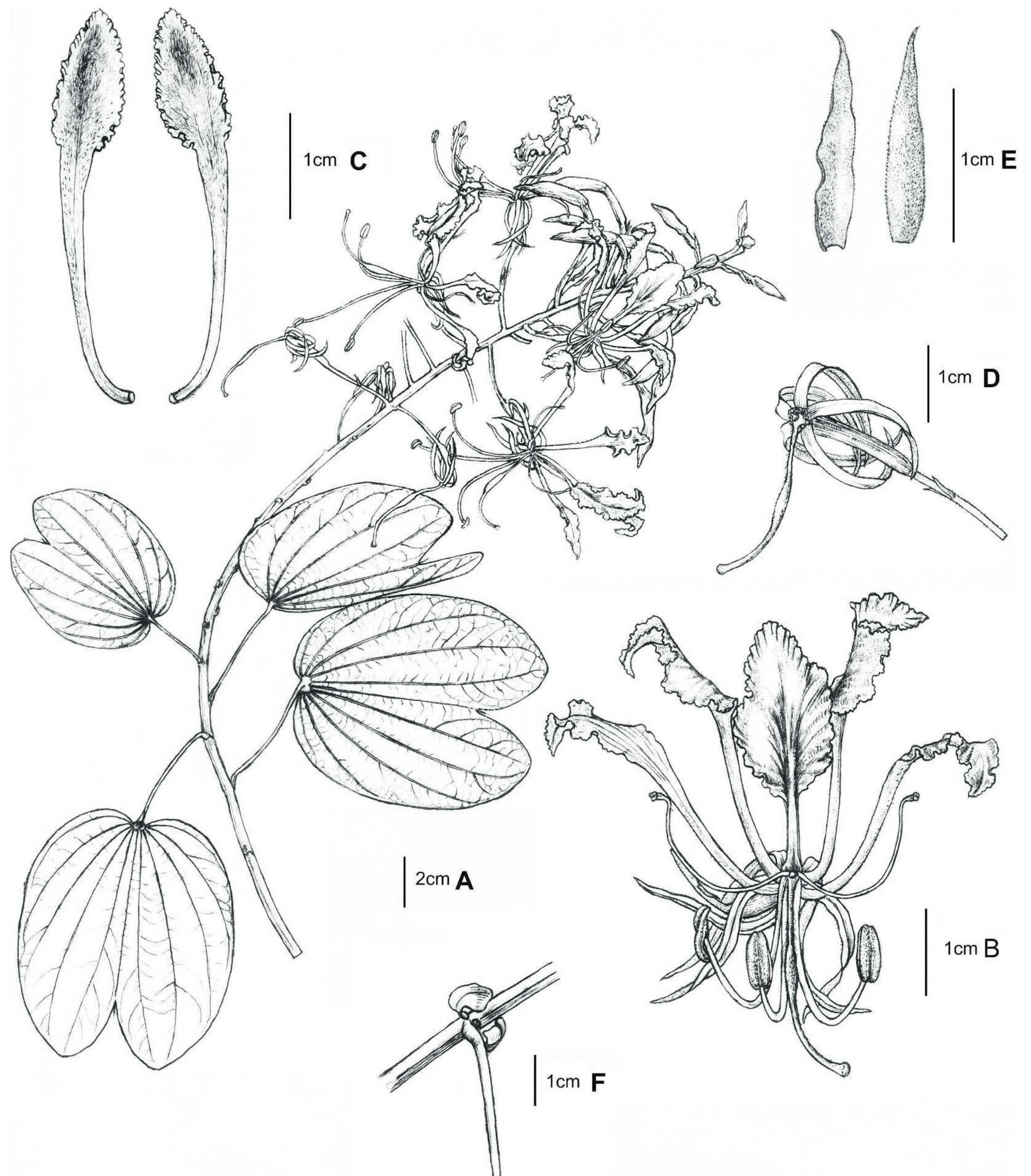


Figure 1. *Bauhinia hekouensis* T. Y. Tu & D. X. Zhang. —A. Branch in flower. —B. Flower. —C. Petals. —D. Young fruits. —E. Bracts. —F. Stipules. Illustrations prepared by Yunxiao Liu from the holotype *T. Tu 511* (IBSC).

the upper surface densely pubescent; the posterior blade of the corolla oblanceolate, the lower part of the blade gradually, the upper part of the blade more abruptly, narrowing to the apices, $14\text{--}22 \times 5\text{--}9$ mm; the blades of the lateral petals slightly narrower than the posterior ones, $12\text{--}21 \times 3\text{--}9$ mm; the petal claws green, equal to or slightly longer than petal blades, \pm pubescent; fertile stamens 3, opposite to the petals; filaments green, glabrous, $32\text{--}47$ mm, starting outward

and then reflexing upward; anthers maroon, elliptic, $3\text{--}4$ mm, opening by longitudinal slits; staminodes 2, filiform, 1 mm; ovary densely pubescent, on a $8\text{--}15$ mm stipe; style pubescent, $12\text{--}19$ mm; stigma green, capitate. Pods flattened, pubescent when young, later glabrous.

Distribution and habitat. *Bauhinia hekouensis* is currently known only from the type locality in a

tropical rainforest in a ravine in Hekou County, Yunnan Province, in southwestern China. Similar habitats are common in Hekou County, whereas many places in this region have been deforested due to the planting of banana and rubber trees. Two other *Bauhinia* species, *B. wuzhengyii* S. S. Larsen and *B. touranensis* Gapnep., co-occur with *B. hekouensis* at the type locality.

IUCN Red List category. *Bauhinia hekouensis* was observed from a single population with four individuals at the type locality. Banana plantings have been found within ca. 50 m of the type locality, disturbing its habitat. *Bauhinia hekouensis* may also be threatened by tourism, because a small dam and a restaurant have been built for tourists near a waterfall in the type locality. Due to the species' restricted occurrence, small population size, and disturbed habitat, *B. hekouensis* should be considered as Critically Endangered (CR), according to IUCN Red List criteria (IUCN, 2001).

Discussion. *Bauhinia hekouensis* is a remarkable species with spindle-shaped, slightly falcate buds, large white flowers, and five free sepals that are reflexed at anthesis. The general morphology suggests that the new species be assigned to *Bauhinia* ser. *Clavatae*, a series of section *Phanera* that is characterized by flowers arranged in racemes; hypanthium up to 3.5 cm; buds oblong or ellipsoid; sepals free, reflexed at anthesis; and stamens equaling or longer than the petals, bearing 7–25 mm, oblong-elliptic anthers (de Wit, 1956; Wunderlin et al., 1987). The leaf shape, flower size, petal blades, and claws of the new species suggest a close relationship to *B. coccinea* subsp. *coccinea*, *B. coccinea* subsp. *tonkinensis* (Gagnep.) K. Larsen & S. S. Larsen, and *B. nervosa*. Geographically, the new species is within the distributional ranges of *B. coccinea* subsp. *tonkinensis*, found in northern Vietnam and southwestern China, and *B. nervosa*, found in Thailand, India, Myanmar, and southwestern China. However, *B. hekouensis* is not sympatric with *B. coccinea* subsp. *coccinea*, which is known from Laos and Vietnam (Larsen et al., 1980; Chen, 1988). The new species differs from the two subspecies of *B. coccinea* and *B. nervosa* by the length of its petioles, which are 2.5–6 cm long (vs. 2.0–2.5 cm long in *B. coccinea* subsp. *coccinea*, 1.5–3 cm long in *B. coccinea* subsp. *tonkinensis*, and 1.5–2.8 cm long in *B. nervosa*); the spindle-shaped, slightly falcate buds (elliptic); the acute bud apices; and the white petals with narrower, oblanceolate, crisped blades (Table 1). In the key to *Flora of China* by Chen et al. (2010), the new species would key to *B. nervosa*, from which

Table 1. Diagnostic morphological characteristics of *Bauhinia hekouensis* compared with those of *B. nervosa* and two subspecies of *B. coccinea*.

Characters	<i>B. hekouensis</i>	<i>B. coccinea</i> subsp. <i>coccinea</i>	<i>B. coccinea</i> subsp. <i>tonkinensis</i>	<i>B. nervosa</i>
Leaves	ovate to suborbicular, up to 12 × 14 cm	ovate to elliptic, up to 8 × 6 cm	ovate to elliptic, up to 8 × 6 cm	suborbicular, up to 7 × 7.4 cm
Petioles	2.5–6 cm	2.0–2.5 cm	1.5–3 cm	1.5–2.8 cm
Pedicels	2.1–3.4 cm	6–9 cm	<3 cm	4–4.5 cm
Hypanthium	tubular, 17–21 mm	tubular, 10–15 mm	tubular, 10–15 mm	tubular, ca. 20 mm
Flower buds	spindle-shaped, 15–25 × 3–5 mm	ellipsoid, 15–20 × 7 mm	ellipsoid, 15–18 × 6–8 mm	ellipsoid, 18–22 × 7–9 mm
Petal blades	crisped, oblanceolate, 12–22 × 3–9 mm	smooth, obovate, 22–32 × 13–22 mm	smooth, elliptic or obovate, 15–17 × 10–13 mm	smooth, broadly obovate, ca. 30 × 20 mm
Petal claws	12–25 mm	15–20 mm	5–8 mm	ca. 20 mm
Petal color	white	red	red to orange	white to yellowish, reddish at base
Geographic distribution	Yunnan, China	Vietnam, Laos	Yunnan, China; Vietnam	Yunnan, China; India; Myanmar; Thailand

it differs by its bud shape and size and petal shape, size, and color.

Paratypes. CHINA. **Yunnan:** Hekou Co., Nanxi Town, Baishahe, 11 Oct. 2008, *T. Y. Tu* 510, 512 (IBSC); 31 Oct. 2011, *T. Y. Tu* 618 (IBSC, KUN, MO); 15 Jan. 2010, *G. B. O. W. S.* 1240 (IBSC, KUN).

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